

Abstract

In general, in one aspect, the invention features a method for reproducing a contone image as a halftone image on a recording medium, using threshold values in a threshold matrix, including the steps of providing a base supercell suitable for periodically tiling a plane, which has a plurality of microdots and a plurality of virtual halftone dot centers; assigning an ordering sequence consisting of a series of numbers on the virtual halftone dot centers in the base supercell; assigning threshold values to microdots in response to the ordering sequence thereby generating the threshold matrix in the base supercell; and using the threshold matrix in combination with the contone image to generate a screened halftone image on the recording medium. The step of assigning an ordering sequence includes: (i) assigning a first number in the ordering sequence to a first virtual halftone dot center in the base supercell; (ii) assigning a second consecutive number in the ordering sequence to a second virtual halftone dot center in the base supercell; (iii) calculating a value of an aggregate distance function for each virtual halftone dot center in the base supercell not already included in the ordering sequence; (iv) selecting a next virtual halftone dot center in the base supercell in response to the calculated aggregate distance function, the next virtual halftone dot center having one of the least values of the calculated aggregate distance function; (v) assigning the next consecutive number in the ordering sequence to the selected next virtual halftone dot center in the base supercell; and then repeating steps (iii), (iv), and (v), until each virtual halftone dot center in the base supercell is included in the ordering sequence.